AMERICAN MUSEUM NOVITATES

Number 411 — Published by THE AMERICAN MUSEUM OF NATURAL HISTORY New York City — March 21, 1930

59.57, 72 E

NEW SPECIES OF ERISTALINÆ WITH NOTES (SYRPHIDÆ, DIPTERA)

BY C. H. CURRAN

For several years I have had in my possession notes on the types of several species of *Eristalis* Latreille, and allied genera, described by Wiedemann. Publication of these has been delayed pending a more thorough study of the Neotropical species of *Eristalis*. In most cases Wiedemann's species have been correctly identified and redescribed and it seems necessary to give only references to both the original and later descriptions in order to make clear the identity of the species. In some cases new descriptions are given and additional characters elucidated.

Mesembrius quadrivittatus Wiedemann

Eristalis quadrivittatus WIEDEMANN, 1819, Zool. Mag., I, p. 17; 1830, 'Ausser. Zweifl.,' II, p. 168.

There is a male from the Winthem Collection determined by Wiedemann, which bears a pink square (indicating it is a type?). This is not the case, as the type locality is Tranquebar, while the specimen before me is from Bengal. Mr. Brunetti has redescribed this and the following species, so there is no need to repeat the description here.

Mesembrius bengalensis Wiedemann

Eristalis bengalensis WIEDEMANN, 1819, Zool. Mag., III, p. 16; 1830, 'Ausser. Zweifl.,' II, p. 167.

The types represent both sexes from the Winthem Collection. In this species the middle tibiæ are between one-third and one-half black while in *quadrivittatus* they are wholly pale. Also the male of the latter has the scutellum wholly pale pilose while in *bengalensis* it is chiefly black-haired.

Mallota? dasyops Wiedemann

Eristalis dasyops WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 171.
Mallota pachymera BEZZI, 1915, 'Syrphidæ of Ethiopian Region,' p. 99.

A female from the Winthem Collection is probably a type, but owing to the fact that it is from this collection, there must be some doubt. The specimen agrees perfectly with Wiedemann's description. That

Bezzi's *Eristalis dasyops* ('Syrph. Eth. Reg.,' p. 93) is wrongly determined is very evident from an examination of the above specimen. The hair of the front is much longer (fully twice as long), as in *E. dasyops* Bezzi, and the eyes of the male are narrowly separated.

Bezzi lists three species of *Mallota* from Africa, but none of them belong to this genus in the strict sense, and they can hardly be placed in *Eristalis*. The termination of the marginal cell is variable, ranging from quite widely open to short petiolate. The four species from Africa may be distinguished as follows.

1. Posterior femora moderately thickened; yellow band on second abdominal segment always entire.....2.
   Posterior femora exceedingly thickened; yellow band usually broadly interrupted.....3.
2. Third abdominal segment with broad, basal yellow band; hind borders of segments 2–4 with yellow line.....*ænigma* Bezzi.
   Third abdominal segment wholly black; segments without yellow apices *extrema* Loew.
3. Scutellum about half black pilose; at least with broad transverse band; eyes of male distinctly touching for short distance; front of female mostly black pilose, but numerous yellow hairs on lower half, especially laterally and across the middle.....*pallidibasis* Bigot.
   Scutellum wholly pale pilose; eyes of male conspicuously separated; front of female chiefly pale pilose on lower half.....*dasyops* Wiedemann.

Mallota posticata Fabricius

Eristalis posticatus Fabricius, 1805, 'Syst. Antl.,' p. 237.
Eristalis coactus Wiedemann, 1830, 'Ausser. Zweifl.,' II, p. 165.

The type male of *coactus* is in perfect condition and is a specimen of *M. posticata* in which the pale pile is restricted to the first one and one-half segments of the abdomen. The origin of Wiedemann's specimen was not known to him. See Williston for description.

Polydontomyia curvipes Wiedemann

Merodon curvipes Wiedemann, 1830, 'Ausser. Zweifl.,' II, p. 149.
Triodonta curvipes Williston, 1886, 'Synopsis N. Amer. Syrph.,' p. 206.

The specimen examined is from the Winthem Collection and has been determined by Loew. The type was in Wiedemann's Collection. For description see Williston. Notwithstanding the presence of Loew's determination label, the specimen was undoubtedly determined by Wiedemann in the first place, but is not likely the type.

ERISTALIS Latreille

In 1925, F. M. Hull[1] reviewed the American species belonging to this genus, illustrating most of the species of which he had examples. Unfortunately, a few of the species were misidentified and it has only been by a comparison of types that the matter has been straightened out. A great deal of the synonymy in the Kertesz catalogue is found to be erroneous, but without more material and an examination of the types it is impossible to do more than call attention to the few cases in which species are, without doubt, wrongly placed. Inasmuch as the older descriptions frequently omit important characters, it is possible that older names may apply to some of the species described as new in this paper, although all of the descriptions have been carefully checked.

The key which follows includes all the American species of which there are examples before me.

TABLE OF SPECIES

1. Eyes reddish brown, with more or less confluent dark brown spots. *Lathyrophthalmus æneus* Scopoli.
   Eyes not spotted ..... 2.
2. Arista plumose or at least with conspicuous pubescence on basal half ..... 56.
   Arista quite bare and of rather even thickness, not conspicuously narrowed before the middle ..... 3.
3. Legs wholly reddish ..... 4.
   At least the posterior femora or tibiæ over one-fourth black ..... 7.
4. Apical half of wings brown on anterior half ..... *hortorum* Fabricius.
   Wings hyaline or only lightly clouded along veins, the cross-veins sometimes conspicuously clouded ..... 5.
5. Mesonotum dull black with a pair of broadly separated, short median vittæ and side margins ochreous; front and scutellum of male and female wholly yellowish pilose ..... *rufipes* Macquart.
   Mesonotum not vittate. with transverse pale bands at least along the suture .. 6.
6. Scutellum with short, black hairs which are abundant on the margins. *præcipuus* Williston.
   Scutellum with longish pale hair on margins ..... *vinetorum* Fabricius.
7. Posterior femora reddish with about the apical third shining black ..... 8.
   Posterior femora black with the apex and sometimes the base reddish ..... 9.
8. Front of female wholly black pilose; thorax without obscure darker vittæ (Guiana) ..... *alacris* Curran.
   Front pale pilose below; thorax with obscure darker vittæ (Brazil). *ochraceus* Williston.
9. Scutellum at least with black pile predominating on part of the surface ..... 10.
   Scutellum with at most a few scattered black hairs ..... 40.

[1] Ohio Journ. Sci., XXV, pp. 11–43, 285–310.

10. Scutellum black with a transverse, rectangular, apical yellow spot, the mesonotum with a pair of gray vittæ in front of the suture. . *meigenii* Wiedemann.
Scutellum differently colored or without the gray vittæ. . . . . 11.
11. Scutellum dull black, at most the apex shining. . . . . 12.
Scutellum marked with yellow or shining brownish-black. . . . . 13.
12. Apex of scutellum gray pollinose. . . . . *cosmius* Schiner.
Scutellum wholly slaty black. . . . . *vierecki*, n. sp.
13. Mesonotum slaty gray with three opaque blackish vittæ. . . . . 14.
Mesonotum differently marked. . . . . 16.
14. Median mesonotal vitta geminate on anterior half. . . . . *furcatus* Wiedemann.
Median vitta not geminate. . . . . 15.
15. Transverse gray spots on second abdominal segment very broadly connected behind. . . . . *mitis*, n. sp.
The gray spots are very widely separated from each other. . . . *parvulus* Williston.
16. Tibiæ, or tarsi, or both partly blackish. . . . . 17.
Tibiæ and tarsi wholly reddish. . . . . *cyatheus* Hull.
17. Apex of posterior tibiæ produced as distinct spur or lobe. . . . . 18.
Apex of posterior tibiæ not at all produced. . . . . 28.
18. Scutellum wholly yellowish. . . . . 19.
Scutellum with the base more or less broadly black. . . . . 22.
19. Third abdominal segment black pilose on posterior third or more. . . . . 20.
Third abdominal segment without black pile. . . . . *nigripes* Wiedemann.
20. Prescutellar pile black. . . . . 21.
Prescutellar pile yellow. . . . . *mus*, n. sp.
21. Mesonotum wholly opaque black behind the suture. . . . . *amazon*, n. sp.
Mesonotum with prescutellar grayish or metallic fascia. . . . . *spectabilis* Hull.
22. Mesonotum behind the suture wholly black pilose except the posterior calli. . . . . 23.
Mesonotum largely yellow pilose behind the suture; ground color of male scutellum almost wholly concealed by short, black pile.
melanaspis Wiedemann.
23. At most the narrow posterior margin of the mesopleura black pilose. . . . . 24.
Posterior half of mesopleura and upper third of sternopleura black pilose.
pygolampus Wiedemann.
24. Scutellum black with a large, subrectangular apical spot pale yellow.
claudia, n. sp.
Scutellum with only the base more or less broadly black. . . . . 25.
25. Scutellum black pilose. . . . . *doris*, n. sp.
Disc of scutellum yellow pilose. . . . . 26.
26. Posterior tibiæ strongly produced at the apex. . . . . 27.
Posterior tibiæ only slightly produced at the apex. . . . . *erraticus*, n. sp.
27. Pile very abundant on sides of mesonotum behind and on sides of scutellum; posterior calli with only a few pale hairs on outer surface in front.
conicus Fabricius.
Pile less abundant, the posterior calli chiefly reddish yellow pilose on outer surface. . . . . *scutellaris* Fabricius.

28. Mesonotum with bluish, grayish or yellowish pollinose fascia behind the suture....29.
Middle of mesonotum unicolorous or nearly so behind the suture....36.
29. Pteropleural pile partly black....30.
Pteropleural pile wholly pale....32.
30. Prescutellar fascia not appearing bluish....31.
Prescutellar fascia metallic bluish in most lights....*erraticus*, n. sp.
31. Posterior tibiæ shining black, the base reddish....*agrorum* Fabricius.
Posterior tibiæ brownish red....*clarissimus* Giglio-Tos.
32. Front of both sexes wholly whitish pilose on lower half or more....33.
Front of both sexes black pilose on whole length in the middle....35.
33. Fourth abdominal segment black except the extreme apex.
albifrons Wiedemann.
Fourth abdominal segment largely red in both sexes....34.
34. Male genitalia reddish and ferruginous; third abdominal segment of female two-thirds shining....*nigripes* Wiedemann.
Male genitalia shining black; third abdominal segment of female with narrow shining fascia....*rufiventris* Macquart.
35. Front of female very narrow, the ocelli almost touching the eyes.
tenuifrons, n. sp.
Front of female wider, the ocelli separated from the eyes by about width of single ocellus....*minutalis* Williston.
36. Posterior calli entirely pale-haired....37.
Posterior calli mostly black-haired....38.
37. Front above antennæ wholly pale pilose....*distinguendus* Wiedemann.
Front at least in the middle with black pile....73.
38. Mesonotum wholly cinereous in front of the suture....*pusillus* Macquart.
Mesonotum with a black fascia in front of the suture....39.
39. Pteropleura entirely pale-haired....*urotænia*, n. sp.
Pteropleura partly black-haired in front....*atrimanus* Loew.
40. With an ashy or metallic fascia situated between the scutellum and suture...41.
Without a prescutellar band....46.
41. Posterior tibiæ with a distinct apical triangular production on outer ventral apex....42.
Posterior tibiæ not produced....44.
42. Prescutellar ashy band narrow, separated from the scutellum by almost its width....*langi* Curran.
Prescutellar fascia rather cyaneous, not broadly separated from the scutellum....43.
43. Posterior tarsi wholly yellow....*mirabilis* Hull.
Posterior tarsi wholly black....*mus*, n. sp.
44. Posterior tibiæ ciliate....*vinetorum* Fabricius.
Posterior tibiæ not ciliate....45.
45. Mesonotum wholly gray in front of suture....?*alhambra* Hull.
Mesonotum with opaque black presutural fascia....*agrorum* Fabricius.
46. Mesonotum opaque black with a strikingly contrasting presutural fascia of white to whitish ochraceous....47.
Mesonotum not opaque black and only obscurely fasciate....50.

47. Pale presutural fascia entire....48.
Pale presutural fascia broadly interrupted leaving a triangle at either side. *triangularis* Giglio-Tos.
48. Hypopleura entirely pale-haired....49.
Hypopleura mostly black-haired....*fasciatus* Wiedemann.
49. Front of both sexes largely black-haired in the middle....*urotænia*, n. sp.
Frontal triangle of male and lower half of front of female wholly white pilose. *pusio* Wiedemann.
50. Posterior tibiæ ciliate....51.
Posterior tibiæ not ciliate....52.
51. Frontal triangle of male and front of female wholly pale pilose. *testaceicornis* Macquart.
Frontal triangle of male and front of female in the middle, black pilose. *obsoletus* Wiedemann.
52. Front of both sexes wholly pale pilose, at least on lower half....53.
Front of both sexes black pilose at least in the middle on whole length....55.
53. Mesonotum shining....54.
Mesonotum opaque with pollen....*distinguendus* Wiedemann.
54. Second abdominal segment with a posterior black fascia....*latifrons* Loew.
Second segment wholly reddish laterally....*bellardii* Jænnicke.
55. Middle tibiæ wholly yellow, the apex rarely brownish....*philippii* Schiner.
Middle tibiæ black on apical third....*assimilis* Macquart.
56. Third abdominal segment wholly shining....57.
Third segment with at least a small opaque black spot or triangle in the middle or with opaque black fascia....61.
57. Tarsi wholly reddish yellow....*flavipes* Walker.
Tarsi partly black or brown....58.
58. Pile of eyes arranged in vertical bands....59.
Pile of eyes not forming bands....60.
59. Posterior femora wholly black....*tenax* Linnæus.
Posterior femora reddish on basal fourth....*tenax campestris* Meigen.
60. Wings reddish brown on basal half in front....*compactus* Walker.
Wings with a large median brown spot in front....*rupium* Fabricius.
61. Face with a median shining black stripe....63.
Face wholly pale pollinose or pubescent....62.
62. Middle tarsi wholly black or brown....*brousii* Williston.
Middle tarsi reddish yellow basally....*arbustorum* Linnæus.
63. Mesonotum fasciate with cinereous and opaque black....*transversus* Wiedemann.
Mesonotum unicolorous or nearly so....64.
64. Posterior calli mostly black pilose....*dimidiatus* Wiedemann.
Posterior calli pale pilose....65.
65. Pile of head and thorax reddish, largely concealing the ground color. *circe* Williston.
Pile of head and thorax yellowish or not sufficiently abundant to conceal the ground color....66.
66. Sides of mesonotum with long, pale yellowish pile concealing the ground color....67.
Pile shorter and not concealing the ground color....69.

67. Third abdominal segment with a broadly interrupted opaque black anterior fascia ..... *pilosus* Loew.
Third segment with entire anterior fascia or none ..... 68.
68. Scutellum shining; abdomen largely æneous ..... *anthophorinus* Fallén.
Scutellum dull or very slightly shining; abdomen black .... *bastardi* Macquart.
69. Deep bluish-black in color ..... *saxorum* Wiedemann.
Not at all bluish ..... 70.
70. Base of posterior femora reddish ..... 71.
Posterior femora wholly black ..... 72.
71. Third abdominal segment with an opaque black anterior fascia .. *obscurus* Loew.
Third segment with at most a median opaque black triangle in front *temporalis* Thomson.
72. Wings reddish brown on anterior half in front ..... *compactus* Walker.
Wings not strikingly bicolored ..... *neomorum* Linnæus.
73. Pile black on posterior fourth of mesonotum ..... *tatei*, n. sp.
Pile of mesonotum wholly pale reddish yellow ..... *philippi* Schiner.

Eristalis dimidiatus Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 180.
WILLISTON, 1886, 'Synopsis N. Amer. Syrph.,' p. 162.

A male from the Winthem Collection is undoubtedly a type but the female from Kentucky probably does not belong to the type series.

Eristalis saxorum Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 158.
WILLISTON, 1886, 'Synopsis N. Amer. Syrph.,' p. 163.

The type is a female from Savanna, in the Winthem Collection.

Eristalis transversus Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 188.
WILLISTON, 1886, 'Synopsis N. Amer. Syrph.,' p. 170.

The type is a female from the Winthem Collection and probably represents one of several specimens before Wiedemann at the time he made his description. The arista is long-haired basally, thus distinguishing the species from all others from America which have the mesonotum pale fasciate.

Eristalis obsoletus Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 175.

A female from Brazil, from the Winthem Collection, I take to be a type, but a male from the same collection labelled "America merid." probably was not included in the type series and a second label, "America

sept.," is a most evident error. I have not seen this species from Mexico, but have it from Brazil and Venezuela. There are two species usually confused here. The second is *E. testaceicornis* Macquart, originally described from Mexico, but quite distinct. The obvious characters separating them may be summed up as follows.

A. Frontal triangle black pilose above and in middle; posterior tibiæ sparsely black pilose anteriorly and posteriorly; female front black pilose, with pale pile on the sides of the lower half and narrowly along the orbits above; posterior margin of second to fourth abdominal segments black pilose except at sides, the sixth rarely wholly pale pilose..... *obsoletus* Wiedemann.

B. Frontal triangle of male, front of female, and abdomen of female wholly pale pilose; posterior tibiæ with sparse yellow pile anteriorly and posteriorly. *testaceicornis* Macquart.

I have seen *testaceicornis* from different parts of Central America and Peru, in addition to Mexican specimens.

Eristalis meigenii Wiedemann

Eristalis meigenii WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 177.

Eristalis quadraticornis MACQUART, 1842, 'Dipt. Exot.,' II, part 2, p. 51; HULL, 1925, Ohio Journ. Sci., XXV, p. 29.

Eristalis testaceiscutellatus MACQUART, 1850, 'Dipt. Exot.,' Suppl., IV, p. 442.

The type, a male, is in perfect condition and as the species is a very distinct one there can be no doubt about its identity. Mr. F. M. Hull has determined specimens for me as *testaceiscutellatus* and has redescribed the species (*loc. cit.*), which is an interesting one from the standpoint of students of the Nearctic fauna as Osborn placed *E. brousii* Williston as a synonym. While the two species are strikingly distinct, the description, as given by Wiedemann, agrees in many respects with *brousii*. In *meigenii* the sides of the scutellum bear an opaque-black triangle and the base is also narrowly dull black, leaving a rectangular yellow spot; this serves to at once distinguish the species.

Eristalis distinguendus Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 191, (male).

Eristalis xanthaspis WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 191, (female).

The male specimen is undoubtedly the type, but the female which agrees perfectly with the description of *xanthaspis* may not be, as it is from Buenos Aires. However, Wiedemann does not mention the locality. The male is from Wiedemann's Collection, the female from Winthem's. Wiedemann's description is fairly complete. The following notes should render the species easily identifiable in conjunction with the original description.

MALE.—Head silvery-white pollinose, the vertical triangle brownish yellow, the occiput more yellowish pollinose above only; cheeks with large shining black triangle; face with rather narrow, shining rusty yellow median vitta; pile of face, front, and posterior orbits white or whitish; of ocellar region, fuscous. Thorax pale yellowish pilose, the yellow scutellum with scattered black hairs on the disc. Second and third abdominal segments yellow, with a broad, median opaque black vitta which widens in front and behind, the pile yellow but somewhat fuscous on posterior half of the second and third segments; narrow apices of segments bright yellow. Middle tibiæ wholly yellow or only a little darkened at apex.

FEMALE.—Front brownish ochreous on more than the upper half, with a broad black orbital vitta and a slender median one in front of the ocelli, the lower portion of the front whitish pollinose with the middle more yellowish; the pile is black on less than the upper half, white below. The median abdominal vitta is broader and widens posteriorly on the second segment, while on the third there is a variable reddish spot separating the median vitta from the broadly black sides.

Eristalis philippi Schiner, which is superficially similar to *distinguendus*, is readily distinguished by the black pilose front.

Eristalis tatei, new species

Mesonotum brownish, the posterior fourth opaque black, the dorsum with a pair of widely separated brownish yellow vittæ. Length, 11 to 12 mm.

MALE.—Face and lower three-fifths of occiput densely cinereous white pollinose, a median vitta on the lower two-thirds of the face reddish brown. Frontal triangle and upper part of occiput with brownish-yellow pollen, the vertical triangle brown. Pile yellowish, on the frontal and vertical triangles and the occipital cilia, black. Vertical triangle broader than long; a weak tubercle on the frontal triangle. Cheeks shining black in front. Antennæ brownish red, the arista brown, bare. Eyes with reddish-yellow pile.

Thorax with reddish-brown pollen, the pleura becoming gray below, the posterior fourth of the mesonotum opaque black, emitting a median and sublateral triangles forward, the median sometimes connected with the geminate median dark vitta; on either side of the median dark vitta is a broad brownish yellow vitta reaching from the anterior margin to the opaque-black band; lateral margins brownish yellow. Pile reddish, black on the posterior third of the mesonotum and on the scutellum. Scutellum dull, pale orange, the immediate base black, the ventral fringe yellow.

Femora shining black, their apices reddish; anterior four tibiæ ferruginous, paler basally, the posterior tibiæ browish with reddish apex, base and incomplete median band. Tarsi brownish, the basal segment reddish.

Wings hyaline, tinged with luteous on the anterior half to beyond the middle. Squamæ brownish, with brown border and fringe. Halteres pale orange.

Abdomen black and orange. First segment black. Second segment orange, the narrow base, except at the sides, and a very broad, posteriorly tapering median vitta, opaque black. Third segment orange with a narrower, opaque-black median vitta which expands to form a pre-apical brownish fascia. Fourth segment shining black, with a broad, laterally tapering opaque-black basal fascia, a narrower one posteriorly and a linear median vitta. Apices of the second to fourth segments reddish. Genitalia shining black. Pile reddish yellow, black on the posterior half of the second

segment, where it expands laterally to reach the basal fourth of the segment and on the third segment with the exception of the lateral margins.

TYPES.—Holotype, male, Mt. Duida, Venezuela, January 11, 1929; paratypes, two males, Mt. Duida, January 11, (G. H. H. Tate).

This species is most nearly allied with *bogotensis* Macquart but is at once distinguished by not having the basal half of the tibiæ whitish and the presence of black pile on the mesonotum. The color of the thorax is very similar in these two species but not at all like *bellardii* Jænnicke, a supposed synonym of *bogatensis*.

Eristalis vierecki, new species

Related to *cosmius* Schiner but lacking the triangular cinereous spots on the posterior part of the mesonotum and with the scutellum unicolorous. Black, the abdomen with three pairs of orange spots. Length, 11 mm.

MALE.—Head wholly black, grayish-white pollinose, the frontal triangle with brown pollen except laterally, the vertical triangle opaque black. The eyes are separated by almost twice the width of the anterior ocellus. Pile of the face, cheeks, lower half of occiput and lower fifth of eyes, whitish, elsewhere black. Face with a median shining black vitta, the cheeks black in front. Eyes brown pilose. Antennæ brown; arista bare.

Thorax slaty black with opaque-black markings as follows: a narrow median vitta, a transverse triangle on either side adjacent to the suture, an obscure stripe on either side in front of the inner ends of the suture, and a large spot on the pleura occupying the posterior border of the mesopleura and a large part of the pteropleura. Pile black; notopleura, upper part of mesopleura, plumula, and the hypopleura beneath the squamæ with some yellow pile. Notopleura with brownish-yellow pollen. Scutellum slaty black, the ventral fringe yellow.

Legs black; femora with some whitish pile basally; anterior tibiæ entirely tawny pubescent on ventral surface. Posterior femora moderately swollen, their tibiæ broadened and flat on ventral surface apically.

Wings pale luteous, the small stigmal spot black. Squamæ brown, with black fringe, the lower lobe broadly whitish basally. Halteres reddish yellow.

Abdomen opaque black, with three pairs of orange spots. The spots on the second segment are broadly separated from each other but only narrowly so from the margins of the segment, their inner ends subtruncate. The spots on the third segment are separated from the posterior and lateral margins, their inner ends oblique, the median black vitta narrowed posteriorly. On the fourth segment the spots are similar to those on the third but they occupy only the basal half of the segment and their posterior third is shining except in the middle. Pile black; yellow on the first segment, base of the second laterally and on the genitalia. The intermediate segments are denuded, the color of the pile therefore doubtful. Genitalia shining black. Apices of second to fifth segments pale yellowish.

HOLOTYPE.—Male, Vista Nieve, Colombia, December 17, 1922, (H. L. Viereck).

This is the only American species I have seen in which the eyes of the male are separated. I have only females of *cosmius* Schiner but the eyes of the male are described as contiguous.

Eristalis furcatus Wiedemann

WIEDEMANN, 1819, Zool. Mag., I, p. 51; 1830, 'Ausser. Zweifl.,' II, p. 176; HULL, 1925, Ohio Journ. Sci., XXV, p. 29.

Type male and female from Wiedemann's Collection. The female has the scutellum wholly black, while in the male it is shining rusty reddish, with darker base. Wiedemann states that the scutellum is shining brownish black with lighter apex, but this character applies better to the female than to the type male. However, the color is variable, sometimes being almost black, and with shades intermediate between this and brownish red.

Eristalis mitis, new species

Very similar to *parvulus* Williston but at once distinguished by the entire gray pollinose fascia on the second abdominal segment. The mesonotum is slaty gray with three opaque-black vittæ. Length, 7.5 to 8.5 mm.

FEMALE.—Face and cheeks white pollinose, a triangle on the cheeks and a broad, entire facial vitta shining black, the latter with pollen above. Front yellow pollinose on lower two-thirds, with a median opaque-black vitta and a subrectangular shining black spot immediately above the antennæ; a broad band of opaque-black across the upper third of the front, the pollen between this point and the antennæ yellowish brown; ocellar triangle blackish. Pile of face, lower half of occiput and sides of the front on lower half, white; on the middle and upper part of the front, black; occipital pile yellow, the cilia black. Facial tubercle large, the face concave above and below; front rather narrow above, widening on the lower two-thirds, the ocellar triangle broadly separated from the eyes. Antennæ blackish, the basal segments and arista reddish brown. Eyes black pilose on upper half, white below.

Mesonotum slaty gray, with more or less brownish tinge; three opaque-black vittæ, the outer ones interrupted at the suture and represented in front by a rectangular black spot, the opaque black extending narrowly along the suture to unite with a lateral triangle of the same color. The lateral vittæ taper from the suture to the scutellum while the median one is linear in front and widest just before the posterior border of the mesonotum. Pile yellow in front of the suture, on the broad sides, and on the pleura, behind the suture and on the scutellum, black, moderately long on the scutellum. Pleura gray pollinose, the sternopleura mostly shining black. Scutellum slaty with a subrectangular yellow apical spot which is preceded by a narrow, transverse opaque-black mark.

Legs black; coxæ thickly gray pollinose; tibiæ shining brownish; knees obscure reddish. Posterior femora strongly swollen.

Wings hyaline, the broad apex and posterior border cinereous; stigma short, dark brown; marginal cell gently widened before its apex. Squamæ white on basal half, brown apically, the fringe pale yellowish. Halteres yellow.

Abdomen opaque black and gray, the tips of the segments pale yellow. First segment gray with a broad black spot on either side posteriorly. Second segment with a basal black fascia which does not reach the sides and is rectangularly produced in the middle to more than half the distance to the posterior border and is also somewhat widened toward either end; posterior border very broadly black except laterally,

the band narrowest in the middle, widest toward either side and cut off obliquely so that it scarcely reaches the posterior angle of the segment. Third to fifth segments each with a broad gray fascia across their middle which widens laterally so as to reach almost the whole length of the segment and on the third segment extends narrowly inward along the base. Pile whitish on the base, sides and fifth segment, on the dorsum very inconspicuous. Sides of abdomen æneous.

TYPES.—Holotype, female, and two paratypes, Corozal, Canal Zone, February 4, 1929, (Curran).

This description would apply very well to *parvulus* Williston with few exceptions. The legs of *parvulus* are more extensively pale and the gray color does not extend inward along the base of the third abdominal segment. The males of both species are unknown.

Eristalis tenuifrons, new species

Mesonotum with three yellowish-gray pollinose fasciæ, the posterior one in the shape of a shallow U; lateral ocelli almost touching the eyes; front black pilose except on the sides of lower third. Length, 7.5 mm.

FEMALE.—Face yellow, white pollinose, a broad median vitta occupying the lower two-thirds, oral margin and cheeks shining black. Front narrow, widening and white pollinose on lower two-thirds, the pollen with brownish tinge in the middle and leaving a large shining black spot immediately above the antennæ; upper part of front grayish brown, separated from the white portion by an opaque-black fascia; ocellar triangle dull brown. Cheeks posteriorly and the posterior orbits white pollinose and pilose; occipital cilia black. Facial tubercle prominent, moderately large, the face concave above. Antennæ reddish, the third segment reddish brown above.

The presutural brownish-black fascia is about as wide as the following gray fascia, while the posterior grayish fascia reaches the posterior border of the mesonotum and extends forward laterally to reach the notopleura narrowly along the lateral margin; the anterior gray fasciæ are divided by a very broad median slaty vitta. Pile of mesonotum yellowish, mixed with black behind the suture and all black immediately in front of the scutellum; pleural pile whitish. Scutellum with erect black pile, pale yellowish in ground color, the basal fourth opaque black. Pleura gray pollinose.

Coxæ black, gray pollinose; femora shining black, their apices reddish, the pile pale yellow. Tibiæ brown, the anterior four with the basal third or more reddish yellow, the posterior pair shining brownish red on the basal half; anterior four tarsi with the basal two segments reddish; tarsi blackish. Posterior femora strongly incrassate.

Wings hyaline; veins black. Squamæ whitish, with brown border and brownish yellow fringe. Halteres yellow.

Abdomen black, with four dull-reddish spots. First segment opaque blackish, thinly gray pollinose in the middle anteriorly, its anterior border pale yellowish laterally. Second segment with a pair of large, subtriangular reddish spots which are broadly separated from each other, do not touch the lateral margins and have their inner ends obtusely rounded or subtruncate, the spots shining on their outer two-thirds; the black part is opaque black, the sides of the abdomen wholly shining.

Third segment with a triangular, basal reddish spot toward either side, opaque brownish black, with a large shining spot on either side which is produced rather narrowly inward along the middle of the segment, the arms gently curved posteriorly. Fourth segment opaque blackish posteriorly and in the middle, the basal half shining black; a slender, tapering opaque fascia reaches along the base from the median vitta about halfway to the lateral margins. Fifth segment wholly shining black. Tips of the segments pale yellow. Pile yellowish, black on the posterior third or more of the second and third segments and the whole of the fourth except laterally.

HOLOTYPE.—Female, Fort Randolph, Canal Zone, February 6, 1929, (Curran).

This species very closely resembles *minutalis* Williston in general appearance. In addition to having a much narrower front the scutellum is very much paler and the abdominal markings are smaller and of a deeper red.

Eristalis tænia Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 174.

A male from Montevideo from the Winthem Collection and a female which is beyond doubt the type of that sex, as it bears a label "*tænia* ♀ ?" in Wiedemann's writing. This latter specimen is slightly stained in front of the thoracal suture which probably caused Wiedemann to question its association with the males. The abdominal markings vary somewhat, especially on the third segment. The male agrees well with the female so the species should be readily recognized from the description of the female given by Hull. Hull does not give sufficient detail of the color of the frontal pile, a character rather important in this group. The front is brownish-yellow pollinose with the sides on the lower half whitish; almost the upper half of the front is clothed with black pile and this runs down less abundantly over the yellowish pollen almost to the antennæ. The posterior tibiæ vary in color from about half reddish to almost wholly black. The following species is very close to *tænia* but very distinct in the male.

Eristalis pusio Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 192.

Allied to *E. tænia* Wiedemann but readily distinguished by the longer front, less widely contiguous eyes and smaller size in the male, and in the female by the black pilose upper two-fifths of the front and white pilose lower three-fifths. In the male the eyes touch for a distance not greater than the width of the ocellar triangle, while in *tænia*, they touch for about twice this distance and the front is shorter, more swollen, the pile is yellowish tinged. Length, 8 to 9 mm.

MALE.—A large triangle on the cheeks and a narrow facial stripe not reaching the antennæ, shining brownish; frontal triangle, face and lower half of occiput silvery whitish pollinose, the upper half of the occiput and vertical triangle rather ochreous,

although the ocelli are surrounded by opaque black which leaves a Y-shaped brownish-yellow mark between them. Vertical triangle and eyes with dense, black pile, the latter bare on lower fifth, the front, face and lower half of occiput silvery-white pilose, the pile of the occiput yellow above, the cilia fine, black. Antennæ reddish.

Thorax with a transverse band of grayish-yellow pollen occupying the area in front of the suture except a conspicuous black band above the anterior slopes which does not reach the sides, the mesonotum elsewhere opaque black, the pleura gray pollinose and whitish pilose, the mesonotum yellow pilose to slightly behind the suture and narrowly along the sides behind, the posterior calli above and the black of the mesonotum black pilose. Scutellum opaque yellow, yellow pilose, only a few scattered black hairs.

Legs shining black, the apices of the anterior four femora, basal half of the anterior tibiæ, basal three-fourths of the middle ones and immediate base of the hind pair, yellow, the first segment of the anterior four tarsi reddish with black apex. Legs mostly yellow pilose except as follows: black on the apical half of the middle femora in front; on apical fourth of posterior femora and all of posterior tibiæ, except the apical half of the posterior surface, where it is pubescent-like and appressed; the tarsi wholly, and on the black portions of the anterior four tibiæ. On the posterior tibiæ the hair above and below is noticeably long and abundant.

Wings hyaline, not at all clouded. Squamæ yellow, with yellow fringe, the upper lobe fuscous. (In *tænia* the squamæ are chiefly fuscous in both sexes.) Halteres yellow.

Abdomen opaque, only a broad, sub-basal, moderately interrupted band on the fourth segment and the genitalia shining black, the third segment sometimes with a small shining roundish spot on either side near the middle. First segment grayish, the sides broadly yellow, the portion under the scutellum chiefly blackish. Second segment lemon-yellow with a rather narrow median opaque-black vitta which widens posteriorly but hardly reaches the apex. Third segment yellow, with a large apical triangle which reaches the base broadly in the middle but extends little more than halfway to the sides posteriorly, the apex of the third and fourth segments narrowly yellow. Abdominal pile yellow, the second segment with a posterior, transverse black pilose triangle, the third with the posterior half black pilose, the pile reaching forward laterally.

FEMALE.—Upper two-fifths of front yellowish-brown pollinose and black pilose, the lower portion white pollinose although in the middle there is a yellowish vitta, the pile whitish.

Second abdominal segment with a small black apical triangle, the anterior point of which is attenuated considerably before the base of the segment, the yellow on the third segment limited to a transverse basal spot on each side. Third segment with a more or less distinct, interrupted shining black fascia across the middle, the fourth and fifth with increasingly wider median fasciæ, that on the fifth segment entire.

Redescribed from type female and four specimens from Flores, Mananas, Amazonas, July 29, Aug. 2 and 4, 1924, collected by Dr. Jos. Bequaert. The type is from the Winthem Collection, "determined" by Wiedemann, and is in fairly good condition.

Eristalis urotænia, new species

This species is evidently related to *pusio* Wiedemann but the presence of black hair on the frontal triangle of the male and the lower half of the front in the female separates it. The frontal triangle of the male is convex while in *pusio* it is almost flat. It also approaches *pusillus* Macquart but the pile of that species is of the same color as in *pusio*. Except that the presutural pale pollinose band is entire it agrees with *triangularis* Giglio-Tos and large series might prove it to be only a variety of *triangularis*. However, it is very distinct in appearance and it seems best to describe it. The presutural band is entire and cinereous in color, preceded by a narrow or wide opaque-black fascia which may or may not attain the lateral margins, the anterior border of the mesonotum more or less broadly dark grayish; mesonotum opaque black behind the suture. Scutellum dull yellow. Length, 9 to 10.25 mm.

MALE.—Face and sides of front yellow in ground color, the front brownish yellow in ground color and densely brownish-yellow pollinose; sides of the front, the face, cheeks and occiput white pollinose the pollen becoming yellowish on the upper part of the occiput, the pile similar in color to the pollen; a median vitta on the face and the lunula translucent reddish yellow, the cheeks brown in front. Vertical triangle brownish-yellow pollinose and black pilose, the pile of the frontal triangle mixed yellow and black. Occipital cilia black. Facial tubercle long and nose-shaped. Antennæ reddish yellow. Eyes with black hair which appears to be somewhat patchy.

Mesonotum opaque black behind the suture, with a broad grayish-yellow band immediately before the suture and a brownish anterior fascia, between these opaque brownish. Pile yellow in front, black behind, wholly black on the posterior calli. Pleura grayish-white pollinose and yellow pilose. Scutellum dull yellowish with black and yellow pile, the latter predominating.

Coxæ and femora black; coxæ pale pollinose, apices of femora reddish yellow; posterior tibiæ brown, yellow at the base; anterior four tibiæ yellow, the front ones broadly reddish brown apically. Tarsi yellow, the apical two segments of the anterior four and the posterior pair entirely reddish brown. Posterior femora moderately incrassate.

Wings hyaline, the base brown. Squamæ wholly brown. Halteres yellow.

Basal three abdominal segments yellowish, the fourth black. Second segment with a narrow, median opaque-black triangle; third with a much broader, subtriangular spot which is truncate anteriorly. Fourth segment opaque black with a rather narrow, shining fascia which lies mostly before the middle of the segment. Genitalia shining black, yellow pilose. First segment, most of the second and the sides of the third and fourth, yellow pilose, the pile elsewhere black. On the second segment the lateral margins are black pilose except at the base. Tips of second and following segments pale yellow.

FEMALE.—Front whitish yellow pollinose on lower half, above pale yellowish brown, in front of the ocelli with a narrow opaque-black fascia from which three lines extend forward, the outer ones resting on the orbits and shorter than the median vitta which reaches halfway to the base of the antennæ; the middle of the front rather ochreous or brownish red in front of the black vitta and clothed with black pile, the lower half of the front pale yellow pilose except medianly, the upper portion black-haired. Pile of the eyes tawny brown. Thorax as in the male although the presutural blackish band may be broader leaving only an obscure anterior fascia of a

paler color. Second abdominal segment with the opaque-black triangle produced posteriorly to form a narrow fascia. Third segment with the posterior third to half black, the lateral margins also black; and with traces of a narrow, shining black fascia. The shining fascia on the fourth segment is only narrowly separated from the base. Fifth segment shining black except the narrow base.

TYPES.—Holotype, male, allotype, female, and one female paratype, Chapada, Brazil, (Williston Collection).

Eristalis fasciatus Wiedemann

WIEDEMANN, 1819, Zool. Mag., III, p. 51; 1830, 'Ausser. Zweifl.,' II, p. 173. HULL, 1925, Ohio Journ. Sci., XXV, p. 34.

A male and female from the Winthem Collection are undoubtedly types.

Eristalis atrimana Loew

LOEW, 1865, Berl. Ent. Zeitschr., IX, p. 167.

The following is a redescription of this little known species.

MALE.—Length, 12 mm. Face and frontal orbits below silvery white, the former with a moderately broad shining black median vitta; front brown pollinose and wholly black pilose; face with fine white pile; cheeks shining black; occiput silvery-white pollinose on lower half or more, yellowish-brown pollinose and black-haired on upper third; vertical triangle reddish-brown pollinose, black-haired, one-third longer than wide, rather short, the eyes contiguous for a slightly longer distance than length of vertical triangle; shining black lunular area half as long as frontal triangle, rounded above; a conspicuous low frontal swelling above the lunula. Eyes with short fuscous pile. Antennæ brown.

Thorax opaque black, the pleura pale pollinose below in front and behind; a narrow, complete yellow pollinose sutural fascia in front of which the pile is yellowish, elsewhere on the opaque part, black. Scutellum opaque reddish yellow, with moderately long, not abundant black pile, the ventral fringe yellow.

Legs black; apices of anterior four femora, basal third of anterior four and fifth of the posterior tibiæ yellowish; first segment of middle tarsi brownish red. Pile black, the usual pubescent areas tawny or golden; posterior femora with pale hairs basally and long yellow hairs below; anterior four tibiæ with sparse short yellow hairs in front.

Wings hyaline, tinged with luteous except behind and apically. Squamæ black, the base of the lower lobes grayish. Halteres reddish.

Abdomen opaque black and rusty reddish; third segment with a pair of small shining spots in the middle, fourth with a broad metallic bluish median fascia which is narrowly interrupted in the middle, genitalia shining black. First segment reddish on the sides, second with broad black median vitta which is strongly broadened at its apical fifth and narrows slightly to the base, third segment with a similar vitta but it is broadened on the apical half. Apices of third and fourth segments pale yellow. Pile wholly black except on the first and basal third of second segment.

Eristalis agrorum Fabricius

Syrphus agrorum Fabricius, 1787, 'Mant. Insect.,' II, p. 335; 1794, 'Ent. Syst.,' IV, p. 285.

Eristalis agrorum Fabricius, 1805, 'Syst. Antl.,' p. 235; Wiedemann, 1830, 'Ausser. Zweifl.,' II, p. 172.

Eristalis cubensis Macquart, 1842, 'Dipt. Exot.,' II, part 2, p. 42; Bigot, 1856, in Sagra, 'Hist. la Isla de Cuba,' VII, pt. 2, p. 337; Hull, 1925, Ohio Journ. Sci., XXV, p. 38; Curran, 1928, 'Sc. Surv. Porto Rico and Virgin Islands,' XI, part 1, p. 43.

This species was originally described from the West Indies, probably from St. Thomas, but has remained unrecognized. Wiedemann recorded it from Brazil. The records of Williston and Hull refer to *mus*, new species. *E. agrorum* is widely distributed in America, ranging from Florida to Brazil. It is one of the few species which shows variation in the color of the scutellar pile: in rare cases the pile is almost all yellow while normally there are only a few pale hairs on the margins.

Eristalis scutellaris Fabricius

Milesia scutellaris Fabricius, 1805, 'Syst. Antl.,' p. 190.
Eristalis scutellata Macquart, 1842, 'Dipt.-Exot.,' II, pt. 2, p. 38.
Eristalis cyaneifera Walker, 1849, 'List Dipt. Brit. Mus.,' III, p. 621.
Eristalis fascithorax Macquart, 1849, 'Dipt. Exot.,' Suppl. IV, p. 139.
Doliosyrphus rileyi Williston, 1886, 'Synopsis N. Amer. Syrph.,' p. 178.

The Kertesz catalogue lists several additional names under the synonymy of *scutellaris*, most of which are probably correctly placed. Two of the names do not apply to this species: *Palpada scutellata* Macquart, (1834), is the same as *conica* Fabricius; *limbatineuris* Macquart evidently does not even belong to the same group since the mesonotum is wholly black behind the suture and it is described as resembling *fasciatus* Fabricius.

Unless the type of *scutellaris* is still in existence it will be necessary to follow Wiedemann's interpretation of the species, which was described from a badly damaged specimen. *Scutellaris*, according to Wiedemann, has the tibiæ brownish and the form which I have accepted as this species agrees. The posterior tibiæ are shining reddish brown and bear a triangular spur on the apex of the posteroventral surface. A male from Panama agrees in all respects but has the posterior tibiæ black and the scutellum pale yellow. It seems to be only a variation although I have seen no other specimens at all approaching it.

Eristalis melanaspis Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 176.
Eristalis volaticus WILLISTON, 1888, Trans. Amer. Ent. Soc., XV, p. 280.

There is a male from Brazil which is probably a type although it is from the Winthem Collection. At any rate, it was determined by Wiedemann. Wiedemann's description is somewhat misleading as the scutellum and hind margin of the thorax is stated to be deep black; this color is due to dense pile. The male is very distinct on account of the vestiture of the scutellum, which leaves only a small apical yellow spot free of dense pile.

Eristalis claudia, new species

Resembles *melanaspis* Wiedemann but the scutellar pile is less abundant and does not conceal the ground color and the mesonotum is black pilose behind the suture. The scutellum is opaque black with a semi-circular apical spot of dull yellow. Length, 12 mm.

MALE.—Face, cheeks and posterior orbits white pollinose and pilose. Head black in ground color, a median facial vitta occupying the lower two-thirds and the cheeks in front shining black. Frontal triangle shining black, the sides brownish-yellow pollinose, in the middle with a large, low tubercle; pile black, narrowly yellow along the orbits. Vertical triangle opaque black; short black pilose. Occiput narrow above, yellowish pollinose, the occipital cilia black. Facial tubercle long and nose-shaped. Antennæ brownish black; arista dull reddish. Eyes short black pilose above, bare below.

Mesonotum with a brownish anterior fascia followed by one of opaque black, the presutural fascia brownish yellow and about as wide as the anterior opaque black one; immediately behind the suture is a very broad opaque-black fascia, the posterior fourth of the mesonotum shining blackish blue, thinly brownish-yellow pollinose; posterior calli opaque black. Pile yellow in front of the suture, black behind, not dense immediately in front of the scutellum. Pleura cinereous white pollinose and white pilose; sternopleura black on the anterior two-thirds and bearing black pile. Scutellar pile wholly black, abundant on the base and sides but not concealing the ground color.

Legs black; tips of anterior four femora and base of their tibiæ obscurely, reddish. Posterior femora strongly incrassate; posterior tibiæ ending in a strong, triangular spur.

Wings brownish, paler on basal half and posteriorly. Squamæ brown, their outer basal corner white; fringe brown. Halteres pale yellowish.

Abdomen opaque black, with four large pale orange spots. Second segment with a very broad median vitta and the posterior sixth opaque black, the sides dull brown. The pale spots on the third segment occupy the basal two-thirds, are separated from each other by almost the width of either spot and from the lateral margins by a brown vitta. Fourth segment with a broad, interrupted shining blackish-blue fascia which widens laterally so that its posterior corners almost reach the posterior angles of the segment, its anterior border transverse and lying at the basal fourth of

the segments. Tips of the second to fourth segments yellow. Pile of the dorsum very short, black; yellow on the yellow spots, first segment, lateral margins and genitalia, wholly black on the lateral margins of the second segment. Genitalia shining black.

HOLOTYPE.—Male, Barro Colorado Island, Canal Zone, February 18, 1929, (Curran).

Eristalis erraticus, new species

Superficially similar to *scutellaris* Fabricius but at once distinguished by the presence of only a short, rounded lobe on the apex of the posterior tibiæ. In *scutellaris* the tibiæ are triangularly produced. Mesonotum fasciate with brownish, yellowish, opaque black and bluish black; abdomen of male with four, of female with at most two pale orange spots. Length, 10.5 to 13 mm.

MALE.—Head black in ground color; face, sides of front narrowly, cheeks and posterior orbits, white pollinose; a broad median vitta on the lower two-thirds of the face, a triangle or stripe on the front of the cheeks and the frontal triangle, shining black; pile white, black on the vertical and frontal triangles, except the very narrow sides of the latter, and on the eyes; occipital cilia black; front with a prominent median tubercle; eyes bare below. Vertical triangle opaque black, pale pollinose in front. Facial tubercle large, prominent, oval. Antennæ blackish brown, the arista reddish brown.

Anterior brownish-pollinose fascia on the mesonotum very narrow, usually represented by a spot on either side; presutural fascia grayish yellow, much narrower than the preceding opaque-black fascia which is about as wide as the one immediately behind the suture; prescutellar blackish-blue fascia very broadly separated from the scutellum and under high magnification appearing grayish. Pile black, the presutural pale fascia wholly yellow-haired and yellow hairs are intermixed with the black toward the front of the mesonotum, except laterally. Pleura whitish gray, pale yellowish pilose, the pteropleura deep black and black pilose. Scutellum dull reddish yellow, short black pilose, the base narrowly dull black.

Legs black; coxæ gray pollinose; tips of anterior four femora and basal segment of middle tarsi, reddish; anterior four tibiæ yellowish on basal half or less. Posterior femora strongly incrassate; posterior tibiæ slightly produced at ventral apex.

Wings moderately brownish, somewhat paler on basal half. Squamæ brown, the outer basal corner broadly whitish; fringe brownish yellow. Halteres yellow.

Abdomen opaque; first segment black; second with a broad black median vitta which is expanded narrowly along the anterior margin and broadly along the posterior margin to reach the sides of the segment narrowly, the sides of the segment dull brownish, the large spots pale orange in color. Almost the basal two-thirds of the third segment is pale orange, the fascia broadly interrupted in the middle except at the extreme base of the segment, and extending over the lateral margins; fourth segment with a broad, narrowly interrupted median blackish-blue fascia which widens laterally. Pile yellow on the lateral margins of the apical two segments and genitalia, whole of the first segment, immediate base of the second at the sides and on most of the pale spots on the second segment. Genitalia shining black. Tips of second to fifth segments yellow.

FEMALE.—Front shining black, at the upper third with a broad opaque-black fascia which emits a slender line forward halfway to the base of the antennæ, the sides

narrowly white pollinose on the lower two-thirds; pile black, white on the lower orbits; ocellar triangle dull black. Scutellum with a few scattered yellow hairs. Posterior tibiæ reddish on basal third. Abdomen rarely with very small basal reddish spots toward the sides of the third segment, the spots on the second often as in the male, frequently absent, in which case the second segment is metallic blackish blue. The metallic areas are much more extensive than in the male; the third segment is metallic with less than the apical half opaque black, the opaque fascia deeply and triangularly excised in the middle anteriorly and strongly narrowed at the sides; fourth segment with the opaque-black fascia not at all narrowed in the middle and gently narrowed to the lateral margin; fifth segment with the base opaque black, otherwise shining.

TYPES.—Holotype, male, Barro Colorado Island, Canal Zone, February 18, 1929. Allotype, female, Corozal, C. Z., Jan. 22, 1929. Paratypes: twenty-six males and three females, from Barro Colorado Island and Corozal, Dec. 22, 1928 to February 21, 1929; two males, Fort Davis, Canal Zone, February 9, 1929, (Curran); two males and one female, Chapada, Brazil, November, December, and one male, Rio de Janeiro, November, (Williston Collection); two males, Rio Frio, Magdalena, Colombia, January 9, 1927; female, Tucurinca, Magdalena, January 4, 1927 and female, Sevilla, Colombia, December 18, 1926, (G. Salt); male, Rio Caiary—Uaupes, State of Amazonas, Brazil, 1906, (H. Schmidt); two females, Mt. Duida, Venezuela, November 4, 17, 1928, (G. H. H. Tate).

This species has been confused with *scutellaris* Fabricius but is quite distinct. As a general rule, it is a little more robust and the pale spots appear to be relatively shorter. It seems likely that one of the names placed in the synonymy under *scutellaris* will be found to apply to this species, but it is wholly impossible to reach any conclusions without recourse to the types. Since several of the types are no longer in existence, the names might well be left under *scutellaris*.

Eristalis doris, new species

Related to *conicus* Fabricius but with the disc of the scutellum bearing yellow hair which is more abundant than the black hair of *conicus;* in the female the scutellum is wholly yellow pilose (wholly black pilose in *conicus*). The female most closely approaches *melanaspis* Wiedemann but in that species the broad base and sides of the scutellum bear black pile. Length, 12.5 mm.

MALE.—Head black in ground color; face, cheeks and occiput cinereous pollinose, the sides of the frontal triangle yellowish; pile of face, sides of front and vertex, yellow, of the lower occiput white, of the middle of the front and ocellar triangle, black. A broad median vitta on the lower two-thirds of the face, a triangle on the cheeks anteriorly and the frontal triangle, shining black, the latter with a conspicuous swelling on the middle. Facial tubercle large, elongate oval. Antennæ reddish brown, the arista luteous. Eyes with yellowish pile. Vertical triangle opaque black, in front grayish pollinose.

Mesonotum with two grayish fasciæ in front of the suture, separated from each other by a broad, opaque-black fascia which extends over the posterior third of the

humeri. Immediately behind the suture is a broad opaque-black fascia while a similarly colored fascia lies on the broad posterior border, the intervening space being blackish blue and thinly grayish pollinose. Pile short, in front of the suture yellowish, behind black. Pleura grayish pollinose and yellowish pilose, the pteropleura opaque black in front and black pilose. Scutellum pale orange, the basal sixth black, the sides broadly clothed with very dense, short, black pile, the base less thickly black pilose, the remainder with sparse yellow pile.

Coxæ black, gray pollinose; femora shining black; tibiæ reddish, the anterior pair broadly brownish apically; tarsi red, becoming brown apically. Posterior femora strongly incrassate, the inner apex of their tibiæ produced as a very short lappet.

Wings grayish, luteous on basal half in front. Squamæ yellowish, with brown border and brownish yellow fringe. Halteres pale yellow.

Abdomen opaque, black and reddish yellow. First segment wholly black; second reddish yellow with a broad median vitta which is slightly expanded just at its posterior end and is produced narrowly along the anterior margin of the segment halfway to the sides. Third segment with the broad median vitta and posterior third opaque black, the lateral margin obscure brownish. Fourth segment with a broad, moderately interrupted, median fascia which widens laterally, shining blackish blue; apices of the second to fourth segments reddish yellow. Pile yellow, black on apical half of the third and whole of the fourth segment except laterally. Genitalia shining black.

FEMALE.—Front black with steel-blue reflections, above the middle with a broad, opaque black or brown fascia which is more or less distinctly bordered with whitish above and below, the orbits whitish pollinose on the lower half and with white pile. The black pile may have some whitish hairs intermixed on the lower half of the front. Presutural pile mostly pale yellowish. Abdomen metallic blackish blue, the second segment sometimes with reddish yellow spots as in the male: first and second segments with opaque black areas as in the male, the third and fourth with an opaque-black posterior fascia which is rather strongly biconvex in front and occupies little more than the posterior third of the segment at the widest part; fifth segment with the base opaque black.

TYPES.—Holotype, male, Chapada, Brazil. Allotype, female, Rio de Janeiro, November. Paratype, female, Piedro R., Brazil, April. All are from the Williston Collection.

In *melanaspis* Wiedemann the opaque-black fasciæ on the mesonotum are usually broadly interrupted in the middle and always are in the female of that species, but they are entire in *doris* as is the case in *conicus* Fabricius but this last species has the scutellum black-haired. A careful comparison of the three species reveals many other differences of a comparative nature but the characters enumerated will serve to readily separate the species.

Eristalis mus, new species

Eristalis agrorum WILLISTON, 1888, Trans. Amer. Ent. Soc., XV, p. 280.

Eristalis agrorum HULL, 1925, Ohio Journ. Sci., XXV, p. 289.

Related to *æmulus* Williston but the apical cell is not clouded with gray and the scutellum is black pilose. Mesonotum with three grayish-yellow fasciæ; posterior

tibiæ slightly, triangularly produced at apex of posteroventral surface. Length, 13 to 17 mm.

MALE.—Face and sides of front reddish in ground color, and white pilose; median facial vitta reddish or ferruginous; cheeks, front and occiput black, white pollinose, the cheeks bare in front; occipital pile white, becoming yellow at the vertex, a few of the occipital cilia black. Frontal and vertical triangles black-haired, the former broadly shining black in the middle and with a median tubercle, the vertical triangle brownish pollinose. Facial tubercle long and nose-shaped. Antennæ ferruginous, the third segment mostly and the arista reddish. Eyes with tawny or yellow pile above, bare below.

Mesonotum grayish yellow in front of the suture, with a narrow, incomplete opaque-black fascia situated halfway between the suture and anterior margin; the third pale fascia is more grayish and is narrowly separated from the scutellum. Pile yellow, orange on the sides and upper part of the pleura, mostly black on the opaque-black postsutural band. Pleura grayish pollinose and yellow pilose; no black hair on the pteropleura. Scutellum dull yellow, with short, appressed black hair, the very narrow border yellow-haired.

Legs black; coxæ pale pollinose, tips of the femora and bases of tibiæ yellow, the anterior four tibiæ broadly so; tarsi sometimes obscure reddish basally. Posterior femora moderately incrassate; posterior tibiæ slightly produced at apex, their ventral surface ciliate, the dorsal surface not distinctly ciliate, but with more abundant hair than usual.

Wings hyaline, tinged with luteous anteriorly, the marginal and submarginal cells with faint traces of gray cloud. Squamæ brownish, the outer basal corner white; fringe yellowish. Halteres pale yellow.

Abdomen black and reddish yellow, opaque, the lateral margins, fasciæ on third and fourth segments and the genitalia, shining. First segment black, its sides broadly yellow. Second segment yellow with a broad median vitta which tapers posteriorly and is continued very narrowly for some distance along the anterior border of the segment and spreads out posteriorly to form a narrow, posterior fascia which does not quite reach the lateral margins. Third segment yellowish with a broad median vitta which is usually slightly enlarged toward the front and spreads out to form a posterior, laterally tapering black or brown fascia; the segment usually with a broadly interrupted median shining fascia which may, however, be obsolete on the inner portion. Fourth segment black, with a broad, shining black fascia lying a little before the middle. Tips of the second to fourth segments pale yellow. Pile yellowish; black on the broad posterior border of the second and third segments and the opaque part of the fourth, on the sides of the second segment and the sides of the third except basally, the lateral margins, however, at least narrowly pale-haired.

FEMALE.—Front black, broadly reddish above the antennæ; brown pollinose but appearing polished in some lights, the sides broadly white pollinose to above the middle and white pilose, the pile otherwise black. Middle tibiæ sometimes mostly yellow. Posterior black fascia on second abdominal segment scarcely tapering and reaching the lateral margin. The sides of the third segment are black, the pale fascia more broadly interrupted, leaving a posteriorly convex reddish yellow or orange spot on either side; the spots are widest in the middle where they occupy not more than the basal half of the segment, the shining median fascia is very distinct and partly black. Fifth segment shining black with the base broadly opaque.

TYPES.—Holotype, male, Corumbá, Brazil, April. Allotype, female, Chapada, Brazil, December. Paratypes: male and female, Corumbá; four males, two females, Chapada, (Williston Collection); male, Corumbá, Matto Grosso, Dec. 14–23, 1919, (R. G. Harris); male, Yucatan, Mexico, (G. F. Gaumer).

Eristalis spectabilis Hull

HULL, 1925, Ohio Journ. Sci., XXV, p. 289.
Eristalis æmulus HULL (not Williston), 1925, Ohio Journ. Sci., XXV, p. 288.

The type is in the collection of the Museum of Comparative Zoölogy (Johnson Collection) and not in the Curran Collection. Hull failed to associate the two sexes and described the male as *æmulus* Williston, a species he did not have before him at the time of his revision of the genus. Williston's description of *æmulus* is quite accurate and the eyes are only narrowly contiguous in the male.

Eristalis hortorum Fabricius

Syrphus hortorum FABRICIUS, 1775, 'Syst. Ent.,' p. 746.
Musca surinamensis DE GEER, 1775, 'Mem. Hist. Ins.,' VI, p. 145, Pl. XXIX, fig. 1.
Eristalis hortorum WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 169.
Eristalis hortorum HULL, 1925, Ohio Journ. Sci., XXV, p. 41.

Hull has redescribed the species and figured the female. The fifth abdominal segment is reddish-brown pollinose apically. There is a female from St. Thomas in the Winthem Collection. The wings are brown on the apical half in front of the fifth vein to a little beyond the end of the first basal cell, thence the brown color is limited behind by a line drawn from the posterior corner of the first basal cell to the tip of the apical cell, thus leaving the tip of the wing and very broad posterior margin clear hyaline. Squamæ yellowish with brownish border, the lower lobe with yellow fringe. The posterior tibiæ bear a rather strong blackish spur on the inner apex and a smaller posterior one. The longish pile on the dorsal and ventral surfaces of the posterior tibiæ is mixed black and yellow except on the yellowish base where it is all pale yellow.

Eristalis amazon, new species

Evidently related to *inversus* Wiedemann but the tibiæ are broadly reddish basally. Wings yellowish brown, the apical and posterior borders cinereous hyaline. Length, 14.5 mm.

FEMALE.—Face yellow in ground color, an incomplete, broad median vitta yellowish brown. Face whitish pollinose and pilose, the sides of the front on the lower two-thirds very narrowly grayish; occiput whitish pollinose, the pile with a yellowish tinge, black above. Front shining black, reddish immediately above the antennæ, the pile short and black; a tubercle above the lunula. Cheeks broadly black in front.

Facial tubercle elongate oval, prominent. Antennæ reddish brown. Eyes with extremely short yellowish hair above.

Mesonotum opaque black, with a narrow brown fascia on the anterior margin and a moderately broad gray one immediately in front of the suture. Pile black, short, longer and yellow in front of the suture except on the anterior margin. Pleura gray, yellow pilose. Scutellum dull yellowish, with short black hair, the border with some longer yellow hair.

Legs black; coxæ gray pollinose; apices of femora reddish yellow; anterior four tibiæ brownish with the basal third or more reddish yellow; posterior tibiæ with the basal fifth reddish yellow; basal segment of the middle tarsi reddish. Posterior femora moderately incrassate; posterior tibiæ slightly triangularly produced at apex of posteroventral surface.

Wings yellowish brown, especially along the veins; the apex and posterior border, as well as the middle of the cells on the apical half of the wing, cinereous hyaline. Squamæ yellowish, with brown border and short yellowish fringe. Halteres yellow.

Abdomen black, mostly opaque, the second segment with a pair of very large reddish spots. First segment black, with the sides broadly red. Second segment reddish, a median vitta which widens anteriorly and posteriorly, extending as a slender fascia along the base of the segment and as a very broad, laterally tapering fascia before the posterior border, opaque black. Tip of second and following segments pale yellow. Third and fourth segments each with a broad, entire shining-black fascia lying mostly before the middle of the segment and expanded laterally to occupy the segment in its full length. Fifth segment shining black with the base broadly opaque. Pile short, black; yellow on the first segment, entire lateral border, and extending well onto the dorsum on the shining fasciæ.

TYPES.—Holotype, female, Rio Caiary-Uaupés, State of Amazonas, Brazil, 1906, (H. Schmidt); paratype, female, Mt. Duida, Venezuela, October 14, 1928, (G. H. H. Tate).

This species approaches the description of *inversus* Wiedemann much more closely than any I have seen but the color of the legs excludes it from that species. It is more robust than any of the other species related to *scutellaris* Fabricius.

Eristalis inversus Wiedemann

WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 161.

A specimen in the Vienna Museum determined, evidently by Wiedemann, as *inversus* is the same as *spectabilis* Hull. However, it seems certain that this is not *inversus* because Wiedemann states that the wings are brown with the apex and posterior border hyaline and the legs wholly black. The species described in this paper as *amazon* apparently approaches *inversus* closer than any other species I have seen but it has the legs partly yellow. The type of *inversus* is in the Frankfort Museum and will have to be examined before the position of the species can be determined. Wiedemann states that it is related to *scutellaris* Fabricius.

Eristalis tenax campestris Meigen

Eristalis campestris Meigen, 1822, 'Syst. Beschr.,' III, p. 387.
Eristalis sinensis Wiedemann, 1824, 'Anal. Ent.,' p. 37; 1830, 'Ausser. Zweifl.,' II, p. 179.

A male from China contained in the Winthem Collection is obviously this form, differing from typical *tenax* in having the posterior femora broadly reddish at the base. It is common in the warmer portions of the world and occurs in North America. I have before me specimens from China, India, Chile, British Columbia, California and northern Africa.

The arista is long pubescent and not bare as has been stated.

Eristalis niger Wiedemann

Wiedemann, 1824, 'Anal. Ent.,' p. 38; 1830, 'Ausser. Zweifl.,' II, p. 183.
Curran, 1928, Journ. Fed. Malay States Mus., XIV, p. 303.

The type is a female from Java and is in good condition. I have a female from Perak which agrees excellently with the type but the shining prescutellar band and the apical half of the scutellum are metallic deep blue instead of black, and the presutural cinereous band is more distinct. I am not certain that de Meijere had *E. niger* before him (see 'Stud. Sud. Asiat. Dipt.,' III, Tijd. v. Ent., 1908) as he states in his table of species that the scutellum is yellow, whereas it is wholly dark. Otherwise de Meijere's description agrees.

Lathyrophthalmus obliquus Wiedemann

Eristalis obliquus Wiedemann, 1829, 'Anal. Ent.,' p. 38; 1830, 'Ausser. Zweifl.,' II, p. 187.
Eristalis obliquus de Meijere, 1908, Tijd. v. Ent., LI, 249, (figs.).
?L. connectens Hervé-Bazin, Ann. Sc. Nat. Bot. et Zool., (10) V, p. 19.

The type of this species is a male from Java. The figure of *L. connectens* as given by Hervé-Bazin (*loc. cit.*) would serve as an excellent illustration of the type. The type traces out to *connectens* in the table of species given by Hervé-Bazin. While I have not seen specimens of *connectens* named by Hervé-Bazin, I feel reasonably certain that at least the male, which must be considered the type of the species, is conspecific with *obliquus*, although the females belong to a different species. I cannot say whether the female illustration of *obliquus* Hervé-Bazin represents this species or whether the females associated with *connectens* belong with the male. Hervé-Bazin based his determination of *obliquus* on the redescription of the species by de Meijere, but judging by de Meijere's figures and description he undoubtedly had *obliquus* before him. It seems likely that *obliquus* Hervé-Bazin represents a different

species as his figure of the female is quite different from that of de Meijere. The legs in the type are as described by de Meijere and, in view of this description, there should be no difficulty in recognizing the species.

L. obliquus has been recorded from Java, Malay States, China and India.

Lathyrophthalmus modestus Wiedemann

Helophilus modestus WIEDEMANN, 1819, Zool. Mag., II, p. 43.
Eristalis modestus WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 165.

A male from Cape of Good Hope is evidently a type, as it bears the word "*modestus*" in Wiedemann's writing, but is from Winthem's Collection. This species is very distinct from all others in the genus on account of the widely separated eyes of the male. The face is entirely grayish pollinose, the pollen becoming yellow on the front, and quite wanting toward the vertex. The pile is wholly pale, except on the posterior legs where it is largely black; that on the thorax reddish yellow or rather tawny. Squamæ and fringe whitish. Fourth abdominal segment with an extremely narrow, partly obsolete pre-median gray fascia and indications of a linear basal one. Bezzi states that there is only the apical band, which is hardly correct, although the other two are but little apparent. He was correct in stating that Adams had *myiotropinus* Speiser before him, and not *analis* Macquart, unless the former is synonymous with the latter (see 'Syrph. Eth. Region,' p. 80, 1915). *L. modestus* male has the posterior trochanters produced below into a strong keel which forms a short but strong apical spur, the crest of the keel being densely clothed with short, stiff black hairs.

Lathyrophthalmus haplops Wiedemann

Eristalis haplops WIEDEMANN, 1830, 'Ausser. Zweifl.,' II, p. 182.

The type is a female. Bezzi left this species in *Eristalis* but the eyes are moderately covered with small round spots and are hairy on the upper fifth only. *L. haplops* traces out in Bezzi's table to section 7, but it disagrees with the diagnosis here in lacking the lateral bare stripes on the face. Face rather strongly conical, a triangle on the cheeks, a facial stripe reaching well above the tubercle and upper third of front, shining black, the head elsewhere pale grayish pollinose but tinged with yellow on upper portion of front. Pile of body pale, on thorax yellowish tinged, only a few black hairs below the hind femora apically; the black portion of the front black-haired. Antennæ black, third segment grayish pol-

linose; arista reddish. Thorax evenly grayish pollinose. Second abdominal segment with a very broad reddish median fascia which is narrowed toward the middle where it is very narrowly interrupted, at the sides occupying the whole length of the segment, leaving a narrow, incomplete basal æneous fascia, and slightly broader, practically entire apical fascia which tapers laterally and is bordered in front by a dull band. Third segment with a sub-basal reddish fascia which reaches the base at the sides and is separated from the base except laterally by about one-third its width, the red ground overlaid by an ashy band. Fourth segment with a very slightly arched basal band, which is separated from the base laterally by a very slender, long triangle and with the apex also broadly ashy, leaving a shining-black median fascia which is narrower than the basal pale one. Fifth segment with the basal fourth ashy, elsewhere shining black.

Megaspis chrysopygus Wiedemann

Eristalis chrysopygus Wiedemann, 1819, Zool. Mag., III, p. 15; 1830, 'Ausser. Zweifl.,' II, p. 152.

Megaspis chrysopygus Curran, 1928, Journ. Fed. Malay States, XIV, p. 309.

The two specimens, male and female, are from the Winthem Collection and are not types, although at least one of them was determined by Wiedemann. The species has been redescribed by Brunetti in the 'Syrphidæ of India.'